

Chapter 6

References

- Abdul, Abdul, S., Sheila F. Kia, and Thomas L. Gibson, *Limitations of Monitoring Wells for the Detection and Quantification of Petroleum Products in Soils and Aquifers*, *Ground Water Monitoring Review*, Vol. IX, No. 2, p. 90-99, Spring 1989.
- Acker, W.L. III, *Basic Procedures for Soil Sampling and Core Drilling*, Acker Drill Company, Scranton, PA, 1974.
- American Society for Testing and Materials, *Standards Related to Environmental Site Characterization, Sponsored by ASTM Committee D-18 on Soil and Rock*, ASTM, West Conshohocken, Pennsylvania, 1997.
- American Society for Testing and Materials, *Standard Practice for Diamond Core Drilling for Site Investigation, D 2113-83*, ASTM, West Conshohocken, Pennsylvania, 1987.
- American Society for Testing and Materials, *Standard Practice for Using the Disposable En Core Sampler for Sampling and Storing soil for Volatile Organic Analysis, D 6418-99*, ASTM West Conshohocken, Pennsylvania, 1999.
- American Society for Testing and Materials, *Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, E 1527-00*, 2000.
- American Society for Testing and Materials, *Standard Guide for Sampling Waste and Soils for Volatile Organic Compounds, D 4547-98*, ASTM West Conshohocken, Pennsylvania, 1998.
- American Society for Testing and Materials, *ASTM Standards on Ground Water and Vadose Zone Investigations, sponsored by ASTM Committee D-18 on Soil and Rock, second edition*, ASTM West Conshohocken, Pennsylvania, 1994.
- American Society for Testing and Materials, *Test Method for Sieve Analysis of Fine and Coarse Aggregates*, ASTM C136-92.
- American Society for Testing and Materials, *Test Method for Particle-Size Analysis of Soils*, ASTM D422-63.
- American Society for Testing and Materials, *Practice for Soil Investigation and Sampling by Auger Borings*, ASTM D1452-80, 1996.
- American Society for Testing and Materials, *Test Method for Penetration Test and Split-Barrel Sampling of Soils*, ASTM D1586-84, 1992.
- American Society for Testing and Materials, *Classification of Soils for Engineering Purposes (Unified Soil Classification System)*, ASTM D2487-93.
- American Society for Testing and Materials, *Practice for Description and Identification of Soils (Visual-Manual Procedure)*, ASTM D2488-93.
- American Society for Testing and Materials, *Standard Guide for Sampling Waste Piles*, D6009-96. 1996.
- American Society for Testing and Materials, *Guide for Soil Sampling from the Vadose Zone*, ASTM D4700-91.

- American Society for Testing and Materials, *Guide for Field Logging of Subsurface Explorations of Soil and Rock*, ASTM D5434.
- American Society for Testing and Materials, *Test Method for Particle-Size Analysis of Soils*, ASTM D422-63.
- American Society for Testing and Materials, *Standard Test Methods for Measuring the Toxicity of Sediment-Associated Contaminants with Fresh-Water Invertebrates*, ASTM E-1706-00, 2000.
- American Society for Testing and Materials, *Standard Guide for Documenting a Ground Water Sampling Event*, ASTM D6089-97e1.
- Anderson, G., *Coring and Core Analysis Handbook*, PennWell Books, Tulsa, OK, 1975.
- Applegate, Joseph L., Fitton, Douglas M., *Rapid Site Assessment Applied to the Florida Department of Environmental Protection's Dry Cleaning Solvent Cleanup Program*, Conference Proceedings, HazWaste World Superfund XVIII., Vol. 2, December 1997.
- Bailey, Dr. Renata, *Improving Sampling Techniques for the Analysis of Lead in Ground Water: Determining Optimal Filtration Conditions*, State of New Jersey, Department of Environmental Protection, Division of Science, Research and Technology, Final Report 2002.
- Barcelona, M.J., J.P. Gibb, J.A. Helfrich, and E.E. Garske, *Practical Guide for Ground-Water Sampling*, Illinois State Water Survey, ISWS Contract Report 314, 1985.
- Barcelona, Gibb and Miller, *A Guide to the Selection of Materials for Monitoring Well Construction and Ground Water Sampling*, Champaign, Il., US Government Printing Office, August 1983.
- Barcelona, M.J., J.A. Helfrich, E.E. Garskey, and J.P. Gibb, *A Laboratory Evaluation of Ground Water Sampling Mechanisms*, in Ground Water Monitoring Review, Spring, Vol. 4, No. 2, pp. 32-41. 1984.
- Barcelona, M.J., J.A. Helfrich, E. E. Garske, and J.P. Gibb, *Field Verification of Sampling Methods and Materials Selection for Ground Water Contamination Studies*, Presented at: Symposium for Ground Water Contamination Studies and Their Standardization, ASTM, Cocoa Beach, Fla., Feb. 1986.
- Barth, D.S. and B.J. Mason, *Soil Sampling Quality Assurance and the Importance of an Exploratory Study*, ACS Symposium Series 267, Environmental Sampling for Hazardous Waste, ACS Publications, American Chemical Society, Wash. D.C., 1984.
- BP Corporation North America and USEPA Region 4 and Region 5., *Monitoring Well Comparison Study: An Evaluation of Direct-Push versus Conventional Monitor Wells*, May, 2002.
- Brady, N. and R. Weil, *The Nature and Property of Soils*, 12th ed., Prentice Hall.
- Burmister, D.M., *Suggested Methods of Tests for Identification of Soils*, 1950.
- Burton Jr., G. S. and P. F. Landrum, *New Standard Guide for Collection, Storage, Characterization and Manipulation of Sediments for Toxicological Testing, Draft 5*, Wright State University, Dayton, Ohio, December 1989.
- California State University, Sacramento School of Engineering, *Water Treatment Plant Operation – A Field Study Training Program*, Sacramento, California, pp. 485-488, 1983.
- Christensen, Thomas H., Bjerg, Poul L., Kjeldsen, P., *Natural Attenuation: A Feasible Approach to Remediation of Ground Water Pollution at Landfills?*, Ground Water Monitoring Review, Winter, 2000.

- Church, Peter E., and Granato, Gregory E., *Bias in Ground Water Data Caused by Well-Bore Flow in Long-Screen Wells* Ground Water, Vol.34, No.2, pp. 262-273, 1996.
- Cohen, Robert M., Bryda, Anthony P., Shaw, Scott T., Spalding, Charles P., *Evaluation of Visual Methods to Detect NAPL in Soil and Water*, Ground Water Monitoring Review, Fall, 1992.
- deVera, Emil R., Bart P. Simmons, Robert D. Stephens and David L. Storm, *Samplers and Sampling Procedures for Hazardous Waste Streams*, Cincinnati, USEPA Municipal Environmental Research Lab EPA-600/2-80-018, 1980.
- Dragun, J., R.Gambino and W. Kuhn, *Coloration Changes of Geologic Media After Addition of Gasoline, Diesel Fuel, and Ethylbenzene*, The Journal of Soil Contamination, Vol. 5, No. 1, pp. 1 - 8, 1996
- Dragun, J., *The Fate of Hazardous Materials in Soil, What Every Geologist and Hydrogeologist Should Know*, Part 1, HMC, March/April 1988
- Driscoll, F.G., *Ground Water and Wells*, Second Edition, H.M. Smyth Company Inc., St. Paul, Minnesota, 1986
- Elton, E.L. and E. Fendley, *Installing the Perfect Monitoring Well: Identifying, Quantifying, and Mitigating Interferences from Monitoring Well Installation Techniques*, Presented at: Symposium for Ground Water Contamination Studies and Their Standardization, ASTM Cocoa Beach, Fla., February 1986.
- Environmental Research Laboratory, Robert S. Kerr, *Practical Guide for Ground Water Sampling*, Ada. OK, US Government Printing Office, EPA-600/2-85/104, 1985.
- Fetter, C.W., Jr., *Contaminant Hydrogeology*, 1993
- Fink, Michael J., Boyajian, Ralph T., *Decontamination Procedures for Ground Water Sampling Equipment*, Proceedings of the Third National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods, May 1989.
- Folk, R.L., *Petrology of Sedimentary Rocks*, Hemphill Publishing Company, 1974.
- Foster, M., Stefanov, J, Bauder, T., Shinn, J., and Wilson, R., *Piezometer Installation Using a Cone Penetrometer* Ground Water Monitoring Review Fall, 1995.
- Franson, MaryAnn H., Managing Ed., *Standard Methods for the Examination of Water and Wastewater 16th Edition*, Port City Press, Baltimore, Md., 1985.
- Franson, Mary Ann H., Managing Ed., *Standard Methods for the Examination of Water and Wastewater 20th Edition*, American Public Health Association, Washington, D.C., 1998.
- Gallant, R.F., J.W. King, P.L. Levins, J.F. Pieciewicz, *Characterization of Sorbent Resins for Use in Environmental Sampling*, Research Triangle Park, N.C., US Government Printing Office, EPA-600/7-78-054, 1978
- Gerlach, Robert W., Dobb, David E., Raab, Gregory A., and Mocerino, John M., *Gy Sampling Theory in Environmental Studies. 1. Assessing Soil Splitting Protocols*, Journal of Chemometrics, Vol. 16, pp. 321-328, 2002.
- Gibbs, J., Brown, Allan G., Turner, Kenneth S., MacLeod, Cecilia L., Jelinski, James C., Koehnlein, Susan A., *Effects of Small-Scale Vertical Variations in Well-Screen Inflow Rates and Concentrations of Organic Compounds on the Collection of Representative Ground-Water Quality Samples*, Ground Water, Vol. 31, No.2, March-April, 1993.

- Gibb, J.P., and M.J. Barcelona, *The Development of Effective Ground Water Sampling Protocols*, Presented at: Symposium of Field Methods for Ground Water Contamination Studies and Their Standardization, ASTM, Cocoa Beach, Fla., Feb. 1986.
- Gibs, J., and Imbrigiotta, Thomas E., *Well Purging Criteria for Sampling Purgeable Organic Compounds*, Ground Water Vol.28, No. 1, pp 68-78, 1990.
- Gibs, J., Imbrigiotta, Thomas E., Ficken, James H., Pankow, James F., Rosen, Michael E., *Effects of Sample Isolation and Handling on the Recovery of Purgeable Organic Compounds*, Ground Water Monitoring Review, Spring, 1994.
- Gillham, R.W., M.J.L. Robin, J.F. Baker, and J.A. Cherry, *Ground Water Monitoring and Sample Bias*, American Petroleum Institute, API Publication 4367, p 206, 1983.
- Hacket, Glen, *Drilling and Constructing Monitoring Wells with Hollow-Stem Augers, Part 2 Monitoring Well Installation*, Ground Water Monitoring Review, pages 60 - 68, 1988
- Hart, Barbara F., Tomlinson, Rodger B., and Chaseling, J., *Using the Stabilization Plateau to Estimate Optimum Well Purge Volume*, Ground Water Monitoring Review, Summer, 2000.
- Hewitt, A.D.. *Enhanced Preservation of Volatile Organic Compounds in Soil with Sodium Bisulfate*, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Special Report 95-26, 1995.
- Hewitt, Alan D., Jenkins, Thomas F., Grant, Clarence L., *Collection, Handling and Storage: Keys to Improved Data Quality for Volatile Organic Compounds in Soil*, American Environmental Laboratory, February 1995.
- Hewitt, Alan D., Lukash, Nicole J.E., *Obtaining and Transferring Soils for In-Vial Analysis of Volatile Organic Compounds*. U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Special Report 96-5, 1996.
- Hewitt, Alan D., *Chemical Preservation of Volatile Organic Compounds in Soil*, Environmental Science and Technology, Vol. 31, No. 1, 1997
- Hewitt, Alan D., *Dynamic Study of Common Well Screen Materials*, Ground Water Monitoring Review, Winter, 1994.
- Hewitt, Alan D., *Storage and Preservation of Soil Samples for Volatile Organic Compound Analysis*, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Special Report 99-5, 1999.
- Hewitt, A. D., Myers, K. F., *Sampling and On-Site Analytical Methods for Volatiles in Soil and Groundwater-A Field Guidance Manual*, U.S. Army Corps of Engineers, Cold Regions Research and Engineering Laboratory, Special Report 99-16, 1999.
- Hewitt, Alan D., *Frozen Storage of Soil Samples for VOC Analysis*, Environmental Testing and Analysis, Vol. 8, No. 5, 1999.
- Hewitt, Alan D., *Methods of Preparing Soil Samples for Headspace Analysis of Volatile Organic Compounds: Emphasis on Salting Out*, Proceedings of the Waste Testing and Quality Assurance Symposium, pp. 323-329, 1996.
- Hewitt, Alan D., Jenkins, Thomas F., Grant, Clarence L., *Collection Handling and Storage: Keys to Improved data quality for Volatile Organic Compounds in Soil*, American Environmental Laboratory, February, 1995.

Field Sampling Procedures Manual

Chapter 6H – Page 178 of 188

- Hyman, Jennifer A., McLaughlin, Dennis G., *Multi-Level Sampling for Naphthalene In a Shallow, Sandy Aquifer*, Ground Water Management, Proceedings of the Fifth National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods. 1991.
- Hutchins, Stephen R., Acree, Steven D., *Ground Water Sampling Bias Observed In Shallow, Conventional Wells*, Ground Water Monitoring Review, Winter, 2000.
- Hutzler, Neil J., *Processes Controlling the Transport and Fate of VOCs in Soil*, National Symposium on Measuring and Interpreting VOCs in Soils: State of the Art and Research Needs, Las Vegas, Nevada, January 12-14, 1993.
- Hutchins, Stephen R., Acree, Steven D., *Ground Water Sampling Bias Observed In Shallow, Conventional Wells*, Ground Water Monitoring Review, Winter, 2000.
- Imbrigiotta, Thomas E., Gibbs, J., Fusillo, T.V., Kish, George R., Hochreiter, Joseph J., *Field Evaluation of Seven Sampling Devices for Purgeable Organic Compounds in Ground Water*, Ground-Water Contamination: Field Methods, ASTM STP 963, A.G. Collins and A. J. Johnson, Eds., American Society for Testing and Materials, Philadelphia, PA 1998.
- Jones, J.L. and L.M. Roberts, *The Relative Merits of Monitoring and Domestic Wells for Ground Water Quality Investigations*, Ground Water Monitoring and Remediation, Vol. XIX, No. 3, pp. 139-144, Summer 1999.
- Jury, W.A., Russo, D., Streile, G., Sesham, E.A., *Evaluation of Volatilization by Organic Chemicals Residing Below the Soil Surface*. Water resources Research, Vol. 26, No. 1 pp.13-20, 1990.
- Kaplan, E., Banerjee, S., Ronen, D., Magaritz, M., Machlin, A., Sosnow, M., Koglin, E., *Multilayer Sampling in the Water-Table Region of a Sandy Aquifer*, Ground Water, Vol. 29, No.2, 1991.
- Kearl, P.M., N.E. Korte and T.A. Cronk, *Suggested Modifications to Ground Water Sampling Procedures Based on the Observations from the Colloidal Borescope*, Ground Water Monitoring Review, Vol. XII, No. 2, pp. 155-160, Spring 1992.
- Kerri, Kenneth D., Proj. Dir., *Operation of Wastewater Treatment Plants, Sacramento, Ca.*, California State University, 1983.
- Kerri, Kenneth D., Proj. Dir., *Industrial Waste Treatment, Sacramento, Ca.*, California State University, 1987.
- Kerri, Kenneth D., Proj. Dir., *Pretreatment Facility Inspection, Sacramento, Ca.*, California State University, 1988.
- Lapham, W.W., F.D. Wilde, and M.T. Koterba, *Guidelines and Standard Procedures for Studies of Ground-Water Quality: Selection and Installation of Wells, and Supporting Documentation*, U.S.G.S. Water-Resources Investigations Report 96-4233, 1997.
- Liikala, Terry L., Olsen, Khrist B., Teel, Steven S., Lanigan, David C., *Volatile Organic Compounds: Comparison of Two Sample Collection and Preservation Methods*, Environmental Science and Technology, Vol. 30, No. 12, 1996.
- Mackiewicz, Michael C., *A Simple 11 Step Procedure to Document the Accuracy, Precision and Significance of Measurements by Field Instrumentation*, Proceedings of the Fourth National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods, Ground Water Management, 1990.

- Marinelli, Fred, and Deanna S. Durnford, *LNAPL Thickness in Monitoring Wells Considering Hysteresis and Entrapment, Ground Water*, Vol. 34, No. 3, p. 405-414, 1996.
- McAllister, P.M., Chiang, C.Y., *A Practical Approach to Evaluating Natural Attenuation of Contaminants in Ground Water*, Ground Water Monitoring Review, Spring, 1994
- McCall, W., Stover, S., Enos, C., Fuhrmann, G., *Field Comparison of Direct Push Prepacked Screen Wells to Paired HAS 2" PVC Wells*, Conference Proceedings, HazWaste World Superfund XVIII, December, 1997.
- McGinnis Services, *Engineered Technical Approach for the Installation & Sampling of the SVE/AS Well Project, Routes 532 & 72*, Woodland Private Study Group Site, 1998.
- Millson, M., Eller, P.M., Ashley, K., *Evaluation of Wipe Sampling Materials for Lead In Surface Dust*, Journal of American Industrial Hygiene, Vol. 55, No. 4 p. 339-1994.
- Minnesota Pollution Control Agency, Water Quality Division, *Sampling Procedures for Ground Water Monitoring Wells*, 1997.
- Montgomery, John H., Welkom, Linda M., *Groundwater Chemicals Desk Reference*, Lewis Publishers, Chelsea, Michigan, 1990.
- Morrison, Robert D, *Ground Water Monitoring Technology: Procedures, Equipment, and Applications*, Prairie DuSac, Wis., TIMCO Mfg., Inc., 1983.
- Neilson, David M. and Gillian L. Yeates, *Comparison of Sampling Mechanisms Available for Small-Diameter Ground Water Monitoring Wells*, Ground Water Monitoring Review vs. Vol. 4, No. 2 pp. 83-99, Spring, 1984.
- Newell, Charles J., Lee, Robert S. Spexet, AnnMarie H., *No-Purge Ground Water Sampling: An Approach for Long-Term Monitoring*, American Petroleum Institute, October, 2000.
- Newell, Charles J., Steven D. Acree, Randall R. Ross, and Scott G. Huling, *Light Nonaqueous Phase Liquids*, EPA Ground Water Issue, 1995.
- NJDEP, *Alternative Ground Water Sampling Techniques Guide*, July, 1994.
- New Jersey Department of Environmental Protection and Energy, *Field Sampling Procedures Manual*, pp. 134-135, May, 1992.
- New Jersey Department of Environmental Protection, *Field Procedures Manual for Water Data Acquisition*, Division of Water Resources, 1987.
- New Jersey Department of Environmental Protection, *New Jersey Safe Drinking Water Act, N.J.A.C. 7:10-1.3*. Division of Water Resources.
- New Jersey Department of Environmental Protection, *The Technical Requirements for Site Remediation*, N.J.A.C. 7:26E *et seq.*
- New Jersey Register, Proposed New Rules: *N.J.A.C. 7:9D*, Monday, August 7, 2000.
- Nyer, E.K., and Gearhart, M.J., *Plumes Don't Move*, Ground Water Monitoring Review, Winter, 1997.
- Oneacre, John., and Figueras, Debbie., *Ground Water Variability at Sanitary Landfills Causes and Solutions, Proceedings of Uncertainty*, Geotechnical Engineering Division/ASCE, 1996.
- Parker, Louise V., *The Effects of Ground Water Sampling Devices on Water Quality: A Literature Review*, Ground Water Monitoring Review, Vol. 14, No. 2, pp. 130-141, 1994.

Field Sampling Procedures Manual

Chapter 6H – Page 180 of 188

- Parker, L.V. and T.A. Ranney, *Sampling Trace-Level Organics with Polymeric Tubings: Part 1. Static Studies*, Ground Water Monitoring and Remediation, Vol. 17, No. 4, pp. 115-124, 1997.
- Parker, L.V. and T.A. Ranney, *Decontaminating Groundwater Sampling Devices*, Special Report 97-25, CRREL, 1997.
- Parker, L.V. and T.A. Ranney, *Decontaminating Materials Used in Groundwater Sampling Devices*, Special Report 97-24, CRREL, 1997.
- Parker, L.V. and T.A. Ranney, *Sampling Trace-Level Organics with Polymeric Tubings: Part 2. Dynamic Studies*, Ground Water Monitoring and Remediation, Vol. 18, No.1, pp. 148-155, 1998.
- Parker, L.V. and T.A. Ranney, *Decontaminating Materials used in Ground Water Sampling Devices: Organic Contaminants*, Ground Water Monitoring and Remediation, Vol. 19, No. 1, pp. 56-68, 2000.
- Parker, L.V. and T.A. Ranney. *Decontaminating Materials Used in Ground Water Sampling Devices: Organic Contaminants*. *Ground Water Monitoring Review*. pp. 56-68, 2000.
- Paul, Cynthia J., and Puls, Robert W., *Impact of Turbidity on TCE and Degradation Products in Ground Water*, Ground Water Monitoring Review, Winter, 1997.
- Pettijohn, F.J., *Sedimentary Rocks*, Harper & Row, 1975.
- Public Service Electric and Gas Company, *Generic Remedial Investigation Work Plan*, Rock Coring - Standard Operating Procedure 310, November, 1997.
- Public Service Electric and Gas Company, *Phase III Remedial Investigation Report for the Former Paterson Gas Plant, Paterson, NJ*, Woodward-Clyde Consultants.
- Puls, Robert W., and Barcelona, Michael J., *Low-Flow (Minimal Drawdown) Ground-Water Sampling Procedures*, USEPA Report, EPA/540/S-95/504, April, 1996.
- Puls, Robert W., Eychaner, James H., *Sampling of Ground Water for Inorganics – Pumping Rate, Filtration, and Oxidation Effects*, Ground Water Management Proceedings of the Fourth National Outdoor Action Conference on Aquifer Restoration, Ground Water Monitoring and Geophysical Methods, 1990.
- Puls, R.W. and Powell, *Acquisition of Representative Ground Water Quality Samples for Metals*, Summer 1992 Ground Water Monitoring Review, Vol. XII, No. 3, pp. 167-176, 1997.
- Radcliffe, M.J., B.W. Rehm, C.S. Peters, T.R. Stolzenburg, and S.D. Johannsen, *Sample Handling: The Impact of Filtering Ground Water Samples*, Proceedings of the Fourth Annual Hazardous Materials Management Conference, Atlantic City, NJ, June 1986.
- Rajagopal, R., Williams, L. R., *Economics of Sample Compositing as a Screening Tool*, Ground Water Quality Monitoring, Vol. 9, No. 1, 1989.
- Ranney, T.A. and L.V. Parker, *Comparison of Fiberglass and Other Polymeric Well Casings: Part III. Sorption and Leaching of Trace-Level Metals*, Ground Water Monitoring and Remediation, Vol. 18, No. 3, pp. 127-133, 1998.
- Ranney, T.A. and L.V. Parker, *Comparison of Fiberglass and Other Polymeric Well Casings: Part II. Sorption and Leaching of Trace-Level Organics*, Ground Water Monitoring and Remediation, Vol. 18, No. 2, pp. 107-112, 1998.
- Ricker, Michael J., *Determining Volatiles in Soils: A New Sampling Procedure*, Environmental Testing and Analysis, Vol. 8, No. 4, 1999.

- Robbins, Gary A., Martin-Hayden, James M., *Mass Balance Evaluation of Monitoring Well Purging*, Journal of Contaminant Hydrology, Vol. 8, pp. 203-224, 1991
- Robbins, Gary A., Henebry, Brent J., Cummins, Timothy M., Goad, Christopher R., Gilbert, Edward J., *Occurrence of MTBE in Heating Oil and Diesel Fuel in Connecticut*, Ground Water Monitoring Review, Fall, 2000.
- Robin, M.J.L., and Gillham, R.W., *Field Evaluation of Well Purging Procedures*, Ground Water Monitoring Review, Fall, 1987.
- Rose, S., and Long, A., *Monitoring Dissolved Oxygen in Ground Water: Some Basic Considerations*, Ground Water Monitoring Review, Winter, 1998.
- Ryan, Robert G., and Dhir, V.K., *The Effect of Interfacial Tension on Hydrocarbon Entrapment and Mobilization Near a Dynamic Water Table*, Journal of Soil Contamination, Vol. 5, No.1 pp.9-34. 1996.
- Saar, R.A., *Filtration of Ground Water Samples: A Review of Industry Practice*, Ground Water Monitoring Review, pp. 56-62, 1997.
- Scaif, Marion R. et. seq., *Manual of Ground Water Sampling Procedures*, USEPA and National Well Water Association, Worthington, OH, pp. 92-93, 1981.
- Schumacher, Brian A., Ward, Steven, E., *Quantitation Reference Compounds and VOC Recoveries from Soils by Purge and Trap GC/MS.*, Environmental Science and Technology, Vol. 31, No. 8, 1997.
- Schumacher, B.A., Shines, K.C., Burton, J.V., Papp, M.L., *A Comparison of Soil Sample Homogenization Techniques*, Hazardous Waste Measurements, Chapter 4. Lewis Publishers, Michigan, 1991.
- Seanor, A.M. and L.K Brannaka, *Influence of Sampling Techniques on Organic Water Quality Analysis*, Presented at: Management of Uncontrolled Hazardous Waste Sites Conference, Washington, DC., Oct., 1984.
- Siegrist, Robert L., *Measurement Error Potential and Control When Quantifying Volatile Hydrocarbon Concentrations in Soils*, Hydrocarbon Contaminated Soils, Vol. I, Lewis Publishers, pp. 205-215, 1991.
- Siegrist, Robert L., Jenssen, Petter D., *Evaluation of Sampling Method Effects on Volatile Organic Compound Measurements in Contaminated Soils*, Environmental Science and Technology, Vol. 24, No. 9, 1990.
- Sorini, Susan S., Schabron, John F., Rovani, Joseph F., *Evaluation of VOC Loss From Soil Samples Contaminated Soil Sediment and Water*, April/May, 2002.
- Steila, D. and T. Pond, *The Geography of Soils, Formation, Distribution and Management*, 2nd edition, Rowman & Littlefield Publishers, Inc., 1989.
- Stevenson, T.J., *Design of a Quality Assurance Program for the Assessment of Ground Water Contamination*, Presented at: NWWA Conference on Ground Water Management, Orlando, Fla., October, 1984.
- Stone, William J., *Low Flow Ground Water Sampling-Is It a Cure-All?*, Ground Water Monitoring Review Spring, 1997.
- Storch Engineers, *Standard PCB Transformer Sampling Procedures*, in SOP, 1986.
- Tai, Doreen Y., Turner, Kenneth S., and Garcia, Lisa A., *The Use of a Standpipe To Evaluate Ground Water Samplers*, Ground Water Monitoring Review, Winter, 1991.

Field Sampling Procedures Manual

Chapter 6H – Page 182 of 188

- Testa, Stephen M., and Michael T. Paczkowski, *Volume Determination and Recoverability of Free Hydrocarbon, Ground Water Monitoring Review*, Vol. IX, No. 1, p. 120-128, Winter 1989, and errata sheet, Vol. IX, No. 2, p. 190 Spring 1989.
- Testa, Stephen M., and Winegardner, Duane L., *Restoration of Contaminated Aquifers*, Lewis Publishers, New York, New York, 1991.
- Thomas, J.M., J.R. Skalski, L.L. Eberhardt, and M.A. Simmins, *Field Sampling for Monitoring, Migration and Defining the Areal Extent of Chemical Contamination*, Presented at: Management of Uncontrolled Hazardous Waste Sites Conference, Washington, DC., Oct. 1984.
- Triplett, Laura D., Burford, P., Sielaff, B., Clark, R.C., *Sampling Procedures for Ground Water Monitoring Wells*, State of Minnesota, Minnesota Pollution Control Agency, 1997.
- United States Department of Interior, *Ground Water Manual, A Water Resources Technical Publication*, Bureau of Reclamation, Chapters 16 and 17, 1985.
- United States Environmental Protection Agency, *Handbook of Suggested Practices for the Design and Installation of Ground-Water Monitoring Wells*, Office of Research and Development, EPA/600/4-89/034, Washington, D.C., March, 1991.
- USEPA, *Field Analytical and Site Characterization Technologies Summary of Applications* EPA-542-R-97-011, November, 1997.
- USEPA, *Characterization of Hazardous Waste Sites: A Methods Manual Vol. II Available Sampling Methods*, EPA-600/4-83-040 Environmental Monitoring and Support Laboratory Las Vegas, NV, 1983.
- USEPA, *Handbook for Sampling and Sample Preservation of Water and Wastewater*, EPA-600/4-82-029 Environmental Monitoring and Support Laboratory, Cincinnati OH, 1982.
- USEPA, *Field and Laboratory Methods for Macroinvertebrate and Habitat Assessment of Low Gradient Non-Tidal Streams*, Mid-Atlantic Coastal Streams Workgroup, Environmental Services Division, Region 3, Wheeling, WV 26003, 23 pp., 1997.
- USEPA, Barbour, M.T., J. Gerritsen, B.D. Snyder, and J.B. Stribling, *Rapid Bioassessment Protocols for Use in Wadeable Streams and Rivers: Periphyton, Benthic Macroinvertebrates, and Fish*, Second Edition, EPA 841-B-99-002, USEPA Office of Water, Washington, DC, 1999.
- USEPA, *Methods for Measuring The Toxicity and Bioaccumulation of Sediment-Associated Contaminants with Freshwater Invertebrates*, Second Edition. EPA/600/R-99/064, USEPA Office of Research and Development and Office of Water, Washington, DC, 2000.
- USEPA, *Ground Water Monitoring Guidance for Owners and Operators of Interim Status Facilities*, EPA-SW-963, Office of Solid Waste and Emergency Response Washington, DC, 1983.
- USEPA, *Handbook for Sampling and Sample Preservation of Water and Wastewater*, Cincinnati, OH, 1982.
- USEPA, *Method 1669: Sampling Ambient Water for Trace Metals at EPA Water Quality Criteria Levels*, Office of Water Engineering and Analysis Division, April, 1995.
- USEPA, *Suggested Operating Procedures for Aquifer Pumping Tests*, EPA/540/S-93/503, Office of Research and Development, Washington, DC, 1993.

- USEPA, *Immunoassay Guidelines for Planning Environmental Projects*, USEPA Quality Assurance Unit Staff, Office of Environmental Measurement and Evaluation, October, 1996.
- USEPA, *Light Non-Aqueous Liquids*, EPA/540/S-95/500, Office of Solid Waste and Emergency Response, 1995.
- USEPA, *Non-Aqueous Phase Liquids Compatibility with Materials Used in Well Construction, Sampling and Remediation*, EPA/540/S-95/503, Office of Solid Waste and Emergency Response, 1995.
- USEPA, *Suggested Operation Procedures for Aquifer Pumping Tests*, EPA/540/s-93/503, Office of Solid Waste and Emergency Response, February, 1993.
- USEPA, *Standard Operating Procedure for Elemental Analysis Using the X-Met 920 Field X-Ray Fluorescence Analyzer*, Office of Environmental Measurement and Evaluation, November, 1996.
- USEPA, *Soil Sampling and Analysis for Volatile Organic Compounds*, EPA/540/4-91/001, Office of Solid Waste and Emergency Response, 1991.
- USEPA, *Lead in Drinking Water-Should You Be Concerned?*, Office of Water, February 1987.
- USEPA, *NPDES Compliance Inspection Manual*, Washington, D.C., 1984.
- USEPA, *NPDES Compliance Sampling Manual*, Washington, D.C., 1977.
- USEPA, *Contract Lab Program (CLP) Statement of Work (SOW) for Organic Analysis, Multi-Media, Multi-Concentration*, Document OLMO4.1. 1998.
- USEPA, *Rapid Bioassessment Protocols for Use In Streams and Rivers*, 1989.
- USEPA, *Test Methods for Evaluating Solid Waste Physical/Chemical*, SW-846 Final Update3 to the 3rd Edition, 1996.
- USEPA, *Standard Operating Procedures, Model 5400 Geoprobe® Operation*, SOP 2050, 1996.
- USEPA, *Clarification Memorandum from Elizabeth Cotsworth to Regions I-X Regarding Use of SW-846 Methods*, Office of Solid Waste, 1998.
- USEPA, *Contract Lab Program Statement of Work for Organic Analysis, Multi-Media, Multi-Concentration*, Document OLMO4.2A Corrections/Modifications/Clarifications. 2000.
- USGS, *Ground-Water Data-Collection Protocols and Procedures for the National Water-Quality Assessment Program: Collection and Documentation of Water Quality Samples and Related Data*, U.S. Geological Survey Report 95-399. 1995.
- USGS, *Field Guide for Collecting Samples For Analysis of Volatile Organic Compounds In Stream Water for the National Water Quality Assessment Program*, U.S. Geological Survey Report 97-0401, 1997.
- USGS, *Field Guide for Collecting and Processing Stream-Water Samples for the National Water-Quality Assessment Program*, U.S. Geological Survey Report 94-455, 1994.
- University of Arizona, College of Agriculture, *Field Manual for Water Quality Sampling*, March, 1995.
- Urban, Michael J., Smith, James S., Schultz, Elizabeth.K., Dickenson, Randall K., *Volatile Organic Analysis for a Soil, Sediment or Waste Sample*, Fifth Annual Waste Testing and Quality Assurance Symposium, July 24-28, Washington, D.C., pp. II-87 to II-101, 1989.

Field Sampling Procedures Manual

Chapter 6H – Page 184 of 188

United State Geological Society, *Field Guide for Collecting Samples for Analysis of Volatile Organic Compounds in Stream Water for the National Water-Quality Assessment Program*, US Geological Survey Report 97-401, 1997.

USGS, *Ground-Water Data – Collection Protocols and Procedures for the National Water-Quality Assessment Program: Selection, Installation, and Documentation of Wells, and Collection of Related Data*, U.S. Geological Survey, Report 95-398, 1995.

USGS, *Guidelines for Collecting and Processing Samples of Stream Bed Sediment For Analysis of Trace Elements and Organic Contaminants for the National Water Quality Assessment Program*, US Geological Survey Report 94-458, 1994.

USGS, *Techniques of Water-Resources Investigations, Book 9, Handbooks for Water-Resources Investigations, National Field Manual for the Collection of Water-Quality Data*, August, 1998.

USGS, *U.S. Geological Survey Protocol for the Collection and Processing of Surface Water Samples for the Subsequent Determination of Inorganic Constituents in Filtered Water*, USGS Report 94-539, 1994.

USGS, *Quality-Control Design for Surface-Water Sampling in the National Water-Quality Assessment Program*, US Geological Survey Report 97-223, 1997.

USGS, *Use of an Ultra-Clean Sampling Technique with Inductively Coupled Plasma-Mass Spectrometry to Determine Trace-Element Concentrations in Water from The Kirkwood-Cohansey Aquifer System, Coastal Plain, New Jersey*, US Geological Survey Report 96-142, 1996.

Vroblesky, Don A., Borchers, James W., Campbell, Ted R., Kinsey, W., *Investigation of Polyethylene Passive Diffusion samplers for Sampling Volatile Organic Compounds in Ground Water at Davis Global Communications, Sacramento, California, August 1998 to February 1999*, U.S. Air Force Center for Environmental Excellence, 2000

Vroblesky, Don A. Hyde, Thomas W., *Diffusion Samplers as an Inexpensive Approach to Monitoring VOC's in Ground Water*, Ground Water Monitoring Review, Summer, 1997.

Vroblesky, Don A., *User's Guide for Polyethylene-Based Passive Diffusion Bag Samplers to Obtain Volatile Organic Compound Concentrations in Wells*, Part 1 and Part 2., USGS Reports 01-4060 and 01-4061, 2001.

Vroblesky, Don A., Petkewich, Matthew D., *Diffusion Sampler Testing at Naval Industrial Reserve Ordnance Plant, Fridley, Minnesota, November 1999 to May, 2000*

Vroblesky, Don A. and Peters, Brian C., *Diffusion Sampler Testing At Naval Air Station North Island, San Diego County, California, November 1999 to January 2000*, USGS Water Resources Investigation, Columbia, South Carolina, 2000

Wells, R.B., *Cores, Cores, Cores*, National Drillers Buyers Guide, pp. 47, August, 1991.

West, Olivia R., Siegrist, Robert L., Mitchell, Toby J., Jenkins, Rodger A., *Measurement Error and Spatial Variability Effects on Characterization of Volatile Organics in the Subsurface*, Environmental Science and Technology, Vol. 29, No. 3, 1995.

Wickramanayake, Godage B., Gavaskar, Arun R., Kelley, Mark E., Nehring, Karl W., *Risk, Regulatory, and Monitoring Considerations Remediation of Chlorinated and Recalcitrant Compounds*, The Second International Conference on Remediation of Chlorinated and Recalcitrant Compounds, May 2000.

Wilson, Neal, *Soil Water and Ground Water Sampling*, Chapter 3, Lewis Publishers, 1995

Wisconsin Department of Natural Resources, *Ground Water Sampling Desk Reference*, Report PUBL-DG-037 96, September, 1996.

Wisconsin Department of Natural Resources, *Ground Water Sampling Field Manual*, Report PUBL-DG-038 96, September, 1996.

29 CFR 1910.120, *Hazardous Waste Operations and Emergency Response: Interim Final Rule*, Occupational Safety and Health Administration.

USGS Links of Interest

[◀ Return to TOC](#)

<http://water.usgs.gov/owq/FieldManual/>

USGS National Field Manual for the Collection of Water-Quality Data

<http://toxics.usgs.gov/pubs/FS-075-01/#4>

USGS information on packer application

<http://water.usgs.gov/nrp/proj.bib/paillet.html>

USGS National Research Program: *Borehole Geophysics as Applied to Geohydrology*

<http://ca.water.usgs.gov/pnsp/pest.rep/voc.html>

USGS Open-File Report 97-401. *A Field Guide for Collecting Samplers for Analysis of Volatile Organic Compounds in Stream Water for the National Water-Quality Assessment Program.*

<http://water.usgs.gov/pubs/wri/wri004252/>

USGS Water-Resources Investigations Report 00-4252. *Guidelines and Standard Procedures for Continuous Water-Quality Monitors: Site Selection, Field Operation, Calibration, Record Computation and Reporting.*

<http://water.usgs.gov/admin/memo/QW/qw97.03.html>

USGS Memorandum on proper cleaning of churn splitters when trace metal analysis is required.

<http://water.usgs.gov/owq/FieldManual/mastererrata.html#Chapter4>

USGS Field Manual Errata on how to repair churn splitter leakage at the spigot.

<http://toxics.usgs.gov/pubs/FS-075-01/#4>

USGS National Research Program: *Characterizing Ground-Water Chemistry and Hydraulic Properties of Fractured-Rock Aquifers Using the Multifunction Bedrock-Aquifer Transportable Testing Tool (BAT³)*

<http://energy.usgs.gov/factsheets/Core/crc.html>

USGS Core Center Research: *Sample and Data Rescue at the Core Research Center*

<http://geology.cr.usgs.gov/crc/>

USGS Core Center Research: *About the Core Research Center*

<http://water.usgs.gov/owq/pubs/wri/wri964233/wri964233.pdf>

USGS Water Resources Investigation Report 96-4233: *Guidelines and Standard Procedures for Studies of Ground-Water Quality: Selection and Installation of Wells and Supporting Documentation.*

USEPA Links of Interest

<http://www.epa.gov/superfund/programs/dfa/dirtech.htm>

USEPA Direct Push Information Web Page

<http://epa.gov/swerust1/pubs/esa-ch5.pdf>

USEPA Chapter 5 “Direct Push Technologies” *From: Expedited Site Assessment Tools For Underground Storage Tank Sites: A Guide for Regulator, EPA 510-B-97-001* – Released by the Office of Underground Storage Tanks.

<http://www.epa.gov/etv/index.html>

USEPA ETV Home Page

Other URLs of Interest

[◀ Return to TOC](#)

Soil Science

<http://www.astm.org/DATABASE.CART/PAGES/D2113.htm>

ASTM Document Summary: D-2113-99, *Standard Practice for Rock Core Drilling and Sampling of Rock for Site Investigation*.

<http://www.astm.org/DATABASE.CART/PAGES/D2487.htm>

ASTM Document Summary: D-2487-00, *Standard Classification of Soils for Engineering Purposes (Unified Soil Classification System)*

<http://www.astm.org/DATABASE.CART/PAGES/D5079.htm>

ASTM Document Summary: D-5079-02, *Standard Practices for Preserving and Transporting Rock Core Samples*.

<http://www.astm.org/DATABASE.CART/PAGES/D6032.htm>

ASTM Document Summary: D-6032-02, *Standard Test Method for Determining Rock Quality Designation (RQD) of Rock Core*.

http://www.fact-index.com/g/gr/grain_size.html

Wikipedia Fact Index: *Grain Size*

<http://scholar.lib.vt.edu/theses/available/etd-32398-73623/unrestricted/appendixB.pdf>

Unified Soil Classification Chart: *Relationship between Swell Index and Attenberg Limits*

http://www.dlwc.nsw.gov.au/care/soil/soil_pubs/soil_tests/pdfs/usc.pdf

Soil Survey Standard Test Method, Unified Soil Classification System: *Field Method*

http://www.itc.nl/~rossiter/Docs/FM5-410/FM5-410_Ch5.pdf

Soil Classification

<http://www.brookes.ac.uk/geology/8320/sst-text.html>

Oxford Brookes University, *Geology: Textures in Terrigenous Clastic Rocks*

<http://www.seafriends.org.nz/enviro/soil/rocktbl.htm#soil%20properties>

Classification of Common Rocks, Soil and More

<http://csmres.jmu.edu/geollab/Fichter/SedRx/sedclass.html>

James Madison University Geology Lab: *A Basic Sedimentary Rock Classification*

<http://www.eos.ubc.ca/courses/eosc221/sed/sili/siligsaw.html>

University of British Columbia, *Siliciclastics: Grain Size*

http://www.osha.gov/pls/oshaweb/owadisp.show_document?p_table=STANDARDS&p_id=10931

US Dept. of Labor, Occupational Safety and Health Admin., Regulation (Standards - 29 CFR), *Soil Classification - 1926 Subpart P, Appendix A*.

http://www.hawaiiasphalt.com/HAPI/modules/06_design_factors/usc.htm

Hawaii Asphalt Paving Industry's Table depicting the *Unified Soil Classification System*

<http://web.stclair.k12.il.us/splashd/soiltype.htm>

Soil Type Decision Tree

<http://www.civil.columbia.edu/%7Eling/burmister/burmister.html>

Biography of Donald Burmister

Sediments

<http://www.epa.gov/ost/cs/>

USEPA Water Science: *Contaminated Sediments*

<http://www.epa.gov/OST/pc/csnews/>

USEPA Water Science: *Contaminated Sediments Newsletters (Archived)*

<http://el.erdc.usace.army.mil/dots/>

US Army Corps of Engineers: *Dredging Operations Technical Support Program*

<http://www.epa.gov/glnpo/sediments.html>

USEPA, *Great Lakes Contaminated Sediments Programs*

<http://www.nap.edu/books/0309054931/html/>

National Academy of Science, *Contaminated Sediments in Ports and Waterways: Cleanup Strategies and Technologies*

<http://www.sednet.org/>

European Sediment Research Network

<http://www.smwg.org/>

Sediment Management Work Group: *Home Page*

<http://www.rtdf.org/>

Remediation Technologies Development Forum: *Home Page*

Manufacturers/Vendors of Environmental Sampling Equipment

<http://geoprobe.com>

Geoprobe Home Page

<http://www.ams-samplers.com/main.shtm?PageName=welcome.shtm>

ARTS Manufacturing Home Page

<http://www.generaloceanics.com/>

General Oceanics Home Page

<http://www.aquaticresearch.com/>

Aquatic Research Instruments Home Page

<http://www.fultzpumps.com/>

Fultz Pumps Home Page

<http://www.wildco.com/>

Wildlife Supply Company Home Page

<http://www.geotechenv.com/>

Geotech Home Page

Field Sampling Procedures Manual

Chapter 6H – Page 188 of 188

<http://www.bennettsamplepump.com/>
Bennett Sample Pumps Home Page

<http://www.qedenv.com/>
QED Environmental Systems

<http://www.isco.com/>
ISCO

<http://eonpro.com/>
EON Home Page

<http://www.caslab.com/>
Columbia

<http://www.flut.com/>
FLUTe Home Page

<http://prosoniccorp.com/>
Prosonic Corp. Home Page

<http://www.solinst.com/>
Solinst Home Page

General

<http://www.state.nj.us/dep/srp/regs/techrule/index.html>
NJDEP “Tech Rules” N.J.A.C. 7:26E *Technical Requirements for Site Remediation*

<http://www.animatedsoftware.com/pumpglos/pumpglos.htm>
The Internet Glossary of Pumps (Animated)

www.pca.state.mn.us/water/groundwater/wqsampling.html

<http://www.frtr.gov/>

<http://www.dnr.wi.gov/org/water/dwg/gw/pubs/field.pdf>

http://www.dnr.wi.gov/org/water/dwg/gw/pubs/desk_a.pdf

http://www.dnr.wi.gov/org/water/dwg/gw/pubs/desk_b.pdf

<http://deq.state.wy.us/wqd/groundwater/pollution.asp>

<http://www.esemag.com/0596/napl.html>

http://portal.environment.wa.gov.au/portal/page?_pageid=233,1&_dad=portal&_schema=PORTAL

<http://www.afcee.brooks.af.mil/>

<http://www.ngwa.org/>